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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Applicants:	:	David M. Wilz, Sr. et al.
Serial No.	:	10/684,273
Filing Date	:	October 11, 2003
Title of Invention	:	AUTOMATICALLY-ACTIVATED HAND-SUPPORTABLE OMNIDIRECTIONAL LASER SCANNING BAR CODE SYMBOL READER HAVING A USER-SELECTABLE...
Examiner	:	n/a
Group Art Unit	:	2876
Attorney Docket No.	:	108-203USA000

Honorable Commissioner of Patents
and Trademarks
Washington, DC 20231

INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. 1.97

Sir:

In order to fulfill Applicants' continuing obligation of candor and good faith as set forth in 37 C.F.R. 1.56, Applicants submit herewith an Information Disclosure Statement prepared in accordance with 37 C.F.R Sections 1.97, 1.98 and 1.99.

The disclosures enclosed herewith are as follows:

U.S. PUBLICATIONS

NUMBER	FILING DATE	TITLE
6,283,375 B1	December 3, 1998	AUTOMATICALLY-ACTIVATED HAND-SUPPORTABLE LASER SCANNING BAR CODE SYMBOL READING SYSTEM WITH DATA TRANSMISSION ACTIVATION SWITCH
6,257,492	June 1, 1999	COMBINATION HAND-HELD AND COUNTER-TOP OMNI-DIRECTIONAL SCANNER
6,247,647 B1	January 13, 1999	SCAN PATTERN GENERATOR CONVERTIBLE BETWEEN MULTIPLE AND SINGLE LINE PATTERNS

6,216,953	July 9, 1996	OPTICAL READER CONTROLLING OPERATION BETWEEN DIFFERENT SCANNING MODES
6,085,981	July 3, 1997	AUTOMATIC HAND-MOUNTED BAR-CODE SYMBOL LASER SCANNER
5,988,508	June 10, 1997	LASER SCANNING SYSTEM AND SCANNING METHOD FOR READING 1-D AND 2-D BARCODE SYMBOLS
5,979,766	June 13, 1997	BAR CODE SYMBOL READING SYSTEM HAVING ONE-WAY RF SIGNAL-RECEIVING KEYBOARD WEDGE INTERFACE
5,962,838	July 2, 1997	BARCODE SCANNER WITH MANUALLY SWITCHABLE SCAN PATTERNS
5,844,227	May 13, 1996	AUTOMATIC HAND-SUPPORTABLE OMNIDIRECTIONAL LASER PROJECTION SCANNER WITH SCAN-HEAD DIRECTED PROJECTION AXIS FOR INTUITIVE HAND-SUPPORTED OMNIDIRECTIONAL SCANNING OF BAR CODE SYMBOLS WITHIN A NARROWLY CONFINED SCANNING VOLUME EXTENDING THEREABOUT
5,828,049	June 18, 1997	CODE SYMBOL READING SYSTEM WITH MULTI-PORT DIGITAL SIGNAL DECODER
5,828,048	June 12, 1997	COUNTERTOP BAR CODE SYMBOL READING SYSTEM HAVING AUTOMATIC HAND-SUPPORTABLE BAR CODE SYMBOL READING DEVICE AND STAND FOR SUPPORTING PROJECTED SCAN FIELD THEREOF
5,825,012	May 30, 1996	HAND-SUPPORTABLE LASER SCANNING BAR CODE SYMBOL READER WITH BAR CODE SYMBOL DETECTION ACTIVATED SYMBOL DECODER
5,808,285	August 17, 1994	PORTABLE CODE SYMBOL READIN

		DEVICE WITH ONE-WAY WIRELESS DATA PACKET TRANSMISSION LINK TO BASE UNIT EMPLOYING CONDITION-DEPENDENT ACOUSTICAL SIGNALLING FOR DATA PACKET RECEIPT ACKNOWLEDGEMENT
5,796,091	May 13, 1996	AUTOMATIC HAND-SUPPORTABLE OMNIDIRECTIONAL LASER PROJECTION SCANNER WITH HANDLE-CONTROLLABLE PROJECTION AXIS
5,789,731	April 24, 1997	LASER CODE SYMBOL SCANNER EMPLOYING OPTICAL FILTERING SYSTEM HAVING NARROW PASS-BAND CHARACTERISTICS AND SPATIALLY-SEPARATED OPTICAL FILTER ELEMENTS WITH LASER LIGHT COLLECTION OPTICS ARRANGED ALONG LASER LIGHT RETURN PATH DISPOSED THEREBETWEEN
5,789,730	June 14, 1996	AUTOMATIC HAND-SUPPORTABLE LASER SCANNER AND METHOD OF READING BAR CODE SYMBOLS USING SAME
5,777,315	August 21, 1996	METHOD AND APPARATUS FOR PROGRAMMING SYSTEM FUNCTION PARAMETERS IN PROGRAMMABLE CODE SYMBOL READERS
5,767,501	May 13, 1996	MASS-BALANCED AUTOMATIC HADN-SUPPORTABLE LASER PROJECTION SCANNER FOR FATIGUE-FREE OMNIDIRECTIONAL SCANNING OF BAR CODE SYMBOLS
5,756,982	April 16, 1996	BODY-WEARABLE AUTOMATIC LASER SCANNER WITH POWER-CONSERVING CONTROL SUBSYSTEM
5,742,043	May 22, 1996	BODY-WEARABLE LASER SCANNING SYSTEM WITH PROGRAMMED MODE FOR CONSECUTIVELY READING BAR CODE SYMBOLS WITHOUT SYSTEM REACTIVATION

5,736,482	February 5, 1996	CATALYSTS FOR REDUCING NITROGEN OXIDES TO MOLECULAR NITROGEN IN A SUPERSTOICHIOMETRIC MEDIUM OF OXIDIZING COMPOUNDS, PROCESS FOR PREPARATION, AND USES
Des. 385,265	March 12, 1996	HAND-SUPPORTABLE LASER SCANNER
5,719,385	December 8, 1995	OPTICAL SCANNER HAVING MULTI-LINE AND SINGLE-LINE SCANNING MODES
5,691,528	January 25, 1995	SCANNING SYSTEM FOR EITHER HAND-HELD OR STATIONARY OPERATION FOR READING 1-D OR 2-D BARCODES
5,661,292	November 20, 1995	AUTOMATIC LASER PROJECTION SCANNER WITH IMPROVED LASER BEAM SCANNING EFFICIENCY
5,637,856	September 25, 1995	SCANNING SYSTEM AND SCANNING METHOD WITH SCAN PATTERN CONTROL FOR READING 1-D AND 2-D BARCODE SYMBOLS
5,637,852	June 7, 1995	COUNTER-TOP PROJECTION LASER SCANNER FOR OMNIDIRECTIONAL SCANNING OF CODE SYMBOLS WITHIN A NARROWLY CONFINED SCANNING VOLUME, WHILE PREVENTING UNINTENTIONAL SCANNING OF CODE SYMBOLS OF NEARBY OBJECTS
5,627,359	May 11, 1995	LASER CODE SYMBOL SCANNER EMPLOYING OPTICAL FILTERING SYSTEM HAVING NARROW PASS-BAND CHARACTERISTICS AND SPATIALLY SEPARATED OPTICAL FILTER ELEMENTS WITH LASER LIGHT COLLECTION OPTICS ARRANGED ALONG LASER LIGHT RETURN PATH DISPOSED THEREBETWEEN
5,616,908	January 11, 1996	AUTOMATIC COUNTERTOP LASER

		SCANNER WITH FLICKERING LASER SCANNER BEAM FOR IMPROVED VISIBILITY THEREOF DURING BAR CODE SYMBOL READING
5,608,202	June 6, 1995	SYMBOL SCANNING SYSTEM AND METHOD HAVING ADAPTIVE PATTERN GENERATION
5,600,121	August 20, 1995	OPTICAL READER WITH INDEPENDENT TRIGGERING AND GRAPHICAL USER INTERFACE
5,591,953	June 7, 1995	COUNTERTOP BAR CODE SYMBOL READING SYSTEM HAVING AUTOMATIC HAND-SUPPORTABLE BAR CODE SYMBOL READING DEVICE AND STAND FOR SUPPORTING PROJECTED SCAN FIELD THEREOF
5,557,093	December 28, 1994	COMPACT PROJECTION LASER SCANNER FOR PRODUCING A NARROWLY CONFINED SCANNING VOLUME FOR OMNI-DIRECTIONAL SCANNING OF CODE SYMBOLS THEREIN, WHILE PREVENTING UNINTENTIONAL SCANNING OF CODE SYMBOLS ON NEARBY OBJECTS
5,528,024	August 19, 1994	DEVICE FOR SELECTIVELY READING CODE SYMBOLS IN SPATIALLY-DEFINED PORTIONS OF THE SCAN FIELD
5,525,789	August 19, 1994	AUTOMATIC LASER BAR CODE SYMBOL READING SYSTEM AND METHOD OF READING BAR CODE SYMBOLS USING SAME
5,484,992	November 24, 1993	AUTOMATIC HAND-SUPPORTABLE LASER SCANNER WITH FLICKERING LASER SCANNING BEAM TO IMPROVE VISIBILITY THEREOF AND BEAM-SYMBOL ALIGNMENT DURING BAR CODE SYMBOL PRESENCE DETECTION
5,468,951	August 19, 1994	AUTOMATIC HAND-SUPPORTABLE

		CODE SYMBOL SCANNING DEVICE WITH IMPROVED LASER BEAM POINTING EFFICIENCY
5,468,949	June 11, 1993	PORTABLE LASER DIODE SCANNING HEAD
5,424,525	November 4, 1993	PORTABLE BAR CODE SYMBOL READING DEVICE WITH BAR CODE SYMBOL DETECTION CIRCUIT FOR ACTIVATING MICROPROCESSOR IMPLEMENTED BAR CODE SYMBOL DECODER
5,340,973	June 12, 1992	AUTOMATIC LASER SCANNING SYSTEM AND METHOD OF READING BAR CODE SYMBOLS USING SAME
5,340,971	September 17, 1991	AUTOMATIC BAR CODE READING SYSTEM HAVING SELECTABLE LONG RANGE AND SHORT RANGE MODES OF OPERATION
5,260,553	September 17, 1990	AUTOMATIC HAND-SUPPORTABLE LASER BAR CODE SYMBOL SCANNER AND METHOD OF READING BAR CODE SYMBOLS USING THE SAME
5,250,792	August 18, 1992	PORTABLE LASER DIODE SCANNING HEAD
5,247,162	April 24, 1991	PORTABLE LASER DIODE SCANNING HEAD HAVING A FOCUSING LENS AND AN APERTURE
5,214,270	November 22, 1991	MODULAR HANDHELD OR FIXED SCANNER
5,206,492	August 5, 1991	BAR CODE SYMBOL SCANNER WITH REDUCED POWER USAGE TO EFFECT READING
5,200,599	July 14, 1992	SYMBOL READERS WITH CHANGEABLE SCAN DIRECTION
5,180,904	October 24, 1991	BAR CODE SCANNER WITH AUTOMATIC DE-ACTIVATION OF SCAN

		UPON BAR CODE RECOGNITION
5,149,950	April 24, 1991	HAND-HELD LASER SCANNING HEAD HAVING DETACHABLE HANDLE PORTION
5,148,008	November 12, 1991	MARK READING DEVICE WITH CYCLICLY VARYING POWER
5,107,100	November 8, 1990	PORTABLE SCANNER WITH ON-BOARD KEYBOARD, DISPLAY, TRANSCEIVER AND PRINTER
5,080,456	February 26, 1990	LASER SCANNERS WITH EXTENDED WORKING RANGE
5,047,617	April 2, 1990	NARROW-BODIED, SINGLE- AND TWIN-WINDOWED PORTABLE LASER SCANNING HEAD FOR READING BAR CODE SYMBOLS
5,021,641	December 21, 1989	HAND-HELD BAR CODE SCANNER WITH JOINTLY MOUNTED SCANNING MIRRORS
5,017,765	December 21, 1989	HAND-HELD BAR CODE SCANNER WITH AUTOMATIC SCANNER DEENERGIZATION
4,933,538	October 21, 1988	SCANNING SYSTEM WITH ADJUSTABLE LIGHT OUTPUT AND/OR SCANNING ANGLE
4,897,532	January 30, 1990	PORTABLE LASER DIODE SCANNING HEAD
4,845,349	September 30, 1986	BAR CODE SCANNER LASER EMISSION REDUCTION
4,835,374	August 9, 1988	PORTABLE LASER DIODE SCANNING HEAD
4,825,057	January 26, 1988	PORTABLE LASER DIODE SCANNING HEAD
4,806,742	January 26, 1988	PORTABLE LASER DIODE SCANNING HEAD

4,639,606	October 26, 1984	BAR CODE SCANNER LASER RADIATION EXPOSURE LIMIT-CONTROL SYSTEM
4,593,186	October 20, 1983	PORTABLE LASER SCANNING SYSTEM AND SCANNING METHODS
4,575,625	September 27, 1983	INTEGRAL HAND-HELD LASER SCANNER
4,465,926	March 5, 1982	OPTICAL READING DEVICE FOR THE MANUAL OPTICAL SCANNING AND FOR EVALUATING OPTICALLY READABLE CHARACTER CODES
4,409,470	January 25, 1982	NARROW-BODIED, SINGLE-AND-TWIN-WINDOWED PORTABLE LASER SCANNING HEAD FOR READING BAR CODE SYMBOLS
4,387,297	February 29, 1980	PORTABLE LASER SCANNING SYSTEM AND SCANNING METHODS

FOREIGN PUBLICATIONS

NUMBER	PUBLICATION DATE	TITLE
JP411203397A	July 30, 1999	BAR CODE READER

TECHNICAL PUBLICATIONS

Product brochure for the LMC555 CMOS Timer by National Semiconductor Corporation, March 2002, pages 1-10.

STATEMENT OF PERTINENCE

U.S. Patent No. 6,283,375 to Wilz et al., discloses an automatically-activated code symbol reading system comprising a bar code symbol reading mechanism contained within a hand supportable housing having a manually-actuatable data transmission switch. During symbol reading operations, the bar code symbol reading mechanism automatically generates a visible laser

scanning pattern for repeatedly reading one or more bar code symbols on an object during a bar code symbol reading cycle, and automatically generating a new symbol character data string in response to each bar code symbol read thereby. During system operation, the user visually aligns the visible laser scanning pattern with a particular bar code symbol on an object (e.g. product, bar code menu, etc.) so that the bar code symbol is scanned, detected and decoded in a cyclical manner. Each time the scanned bar code symbol is successfully read during a bar code symbol reading cycle, a new bar code symbol character string is produced, while an indicator light on the hand-supportable housing is actively driven. During the bar code symbol reading cycle, the user actuates the data transmission switch producing a data transmission control activation signal and enabling a subsequently produced symbol character data string to be automatically selected and transmitted to the host system. By virtue of the present invention, automatically-activated hand-supportable bar code symbol readers are now able to accurately read, in an unprecedented manner, bar code symbols on bar code menus, consumer products positioned in crowded point-of-sale environments, and other objects requiring automatic identification and/or information access.

U.S. Patent No. 6,257,492 to Bressler et al. discloses a bar code scanner for either fixed or hand-held disposition at a counter. The scanner includes a compact housing including a spherical head with a window and a downwardly protruding stem, and a sliding carriage attached to the base of the stem. The stem and sliding carriage cooperate with arcuate guide rails in the compact base for positioning the window via pivoting the head about a horizontal axis. An omni-directional scanning assembly is mounted in the head and this includes an object detection circuit for detecting and determining the presence of an object within an operative scanning field, a light source for generating a laser beam when an object is within the scanning field, a scanning mechanism for scanning the light beam across the object and its bar code, a photoreceiving circuit for receiving light reflected from the bar code, an A/D converter for generating a digital signal representing the light reflected from the bar code, and processing and control circuitry for decoding the bar coded-information and controlling overall system flow.

U.S. Patent No. 6,247,647 to Courtney et al. discloses an arrangement for and a method of reading bar code symbols on a target to move a light beam emitted by a light source in a multiple line, scan pattern during a scan period in a first operational mode. Upon selection of a second operational mode by a user, a controller intermittently operates and energizes the light source to emit the light beam for a working time period which is less than, and a fraction of, the scan period to generate a single scan line across the symbol.

U.S. Patent No. 6,216,953 to Kumagai et al. discloses an optical reader which is capable of reading a bar code in a mounted state when an article carrying the bar code passes and is capable of reading bar codes set in an array format on a menu sheet in a hand-held state. The optical reader comprises a light source, a scanner that is driven by a drive and scans light emanating from the light source, a plurality of reflection mirrors that reflect scanning light scanned by the scanner and create a scanning pattern composed of a plurality of scan trajectories, a read window through which scanning light reflected from the reflection mirrors is emitted, and a light receiver for receiving light reflected from a mark. The optical reader further comprises a mode changer for changing a plurality of operation modes among which one or ones of the plurality of scan trajectories to be validated for reading are different. The operation modes include a specific scanning ray mode in which reading the mark by tracing only a single scan trajectory constituting the scanning pattern is validated but reading the mark by tracing the multiple scan trajectories is

invalidated. For reading any of bar codes set in an array format on a menu sheet, the single scan trajectory constituting the scanning pattern will be drawn on a bar code to be read. Since reading by tracing the multiple scan trajectories is invalid, only the bar code intended to be read is read.

U.S. Patent No. 6,085,981 to Knowles et al. discloses a portable automatic code symbol reading system having a laser scanning engine mounted upon the hand of its operator to provide hands-free automatic laser scanning capabilities. The automatic code symbol reading system includes a battery power supply aboard its hand-mounted housing, and a power-conserving control subsystem for conserving the consumption of electrical power during automatic portable laser scanning operations. The control subsystem of the present invention has a plurality of control centers which control the operation of the system components in accordance with preselected system control operations. Each of the control centers is responsive to control activation signals generated by certain of the system components upon the occurrence of predefined conditions. Certain of the control centers are capable of overriding other control centers to provide diverse control capabilities. These control capabilities facilitate execution of intelligent functions and power consumption measures required during automatic, hands-free code symbol reading operations.

U.S. Patent No. 5,988,508 to Bridgelall et al. discloses a reader for electro-optical reading bar code symbols of reduced height, comprises a light source for generating a light beam along an optical path; a pair of oscillatable reflectors in the optical path; a first drive for oscillating the reflectors at different frequencies that are a ratio of about 10%-30% apart to create a scan pattern; and a second drive for rotating the scan pattern about an axis that is generally orthogonal to the scan pattern.

U.S. Patent No. 5,979,766 to Rockstein et al. discloses a fully automatic bar code symbol reading system having at least one portable bar code symbol reading device and an associated base unit positioned within the data transmission range of the bar code reader range without a physical wiring connection between the bar code reader and the base unit. After each successful reading of a bar code symbol, the bar code reading device automatically produces symbol character data representative of the bar code symbol, synthesizes a group of data packets each containing the symbol character data, and then transmits the synthesized group of data packets to the base unit. Upon the successful receipt of one of the transmitted data packets and the recovery of symbol character data therefrom, the base unit generates an acoustic acknowledgement signal that is perceptible to the user of the bar code symbol reading device and indicates that the transmitted symbol character data has been successfully received. The base unit includes data format conversion circuitry that converts the symbol character data into the same format produced by a computer keyboard, and an interface circuit that interfaces the output port of the base unit with the keyboard input port of the host device.

U.S. Patent No. 5,962,838 to Tamburrini discloses a scanner with multiple modes of operation producing two or more distinct scan patterns, with each scan pattern optimized for different modes of operation with a manually actuated switching mechanism whereby the operator may readily select a desired scan pattern. The switching mechanism may operate by mechanically moving one set of scan pattern generating optics out of the optical path of the scanner and/or moving another set of scan pattern generating optics into the optical path. Alternatively, the different sets of scan pattern generating optics may remain stationary while the optical path of the

scanner is moved. In either case the operator may choose from among two or more distinct scan patterns the scan pattern most appropriate to the scanning application at hand.

U.S. Patent No. 5,844,227 to Schmidt et al. discloses a fully automatic bar code symbol reading system comprising an automatic (i.e., triggerless) portable bar code symbol reading device with an omnidirectional projection laser scanning engine mounted within the head portion of its hand-supportable housing, and an associated base unit positioned within the data transmission range thereof without a physical wiring connection thereto. The hand-supportable bar code symbol reading device produces a narrowly confined scanning volume for omnidirectional scanning of code symbols presented therein, while preventing unintentional scanning of code symbols on nearby objects located outside thereof.

U.S. Patent No. 5,828,049 to Knowles et al. discloses a bar code symbol reading system having a laser scanner, and a multi-port digital signal decode capable of decoding digital signals produced from various types of scanning devices including, for example, high-speed counter top scanners, low-speed hand-held scanners, wand scanners, light pen scanners, and magnetic card scanners. The digital signal decoder includes a plurality of data input ports for receiving digital input signals produced from the various scanning devices. The digital signal decoder also includes common digital signal and data processing circuitry for processing the digital input signals and digital data so as to produce, as output, decoded symbol data. In addition, the digital signal decoder further includes an output data port for providing the decoded symbol data to a host device operably connected to the digital signal decoder. In the illustrative embodiment, the digital signal decoder is realized using VLSI circuit and microprocessor technology.

U.S. Patent No. 5,828,048 to Rockstein et al. discloses a bar code symbol reading system with automatic modes of hand-held (i.e., hands-on) and stand-supported (i.e., hands-free) operation. In the hand-held mode of automatic operation, the user initiates laser scanning by simply bringing the object within at least a portion of the scan field of the automatic bar code symbol reading device. In the stand-supported mode of automatic operation, a scanner support stand is used to support the automatic bar code symbol reading device relative to a countertop surface so that the scan field is projected away from the scanner support stand and the hand-supportable housing, and extends above the countertop surface permitting the automatic reading bar code symbols on goods passed thereby. This way, during the scanner-supported mode of automatic operation, a bar code symbols on an object of virtually any size can be automatically read when the object is automatically detected in the outwardly projected scan field while the hand-supportable bar code symbol reading device is supported within the scanner support stand.

U.S. Patent No. 5,825,012 to Rockstein et al. discloses a method and apparatus for automatically reading bar code symbols. One aspect of the present invention concerns a method of reading bar code symbols using an automatic hand-holdable bar code symbol reading device. In general, the automatic bar code symbol reading device comprises a hand-holdable housing containing operative elements which provide an object detection field and a scan field each defined external to the housing. The method involves automatically detecting the presence of an object within the object detection field by sensing object sensing energy reflected off the object. In a preferred embodiment, the object sensing energy is IR radiation produced from an object sensing energy source disposed within the housing. In automatic response to the detection of the object within the object detection field, the hand-holdable device detects the presence of a bar

code within the scan field using a laser beam produced within the housing. Then, in automatic response to the detection of a bar code in the scan field, the automatic hand-holdable bar code symbol reading device reads the detected bar code in the scan field by producing scan data signals from the detected bar code and thereafter collecting and analyzing the same. Another aspect of the present invention concerns a hand-holdable data collection device adapted for use with the automatic bar code symbol reading device to form a portable symbol reading system characterized by versatility and simplicity of use.

U.S. Patent No. 5,808,285 to Rockstein et al. discloses a fully automatic bar code symbol reading system having at least one automatic portable bar code symbol reading device, and an associated base unit positioned within the data transmission range thereof without a physical wiring connection thereto. After each successful reading of a bar code symbol, the bar code symbol reading device automatically produces symbol character data representative of the decoded bar code symbol, synthesizes a group of data packets each containing the symbol character data, and then transmits the synthesized group of data packets to the base unit. Upon the successful receipt of one of the transmitted data packets and the recovery of symbol character therefrom, the base unit generates an acoustical acknowledgement signal that is perceptible to the user of the bar code symbol reading device and indicates the transmitted symbol character data has been successfully received. In typical applications, a plurality of such bar code systems are used in physical proximity with each other, such as in conventional retail point-of-purchase environments. In accordance with the present invention, radio frequency carrier signals of the same frequency are used by each hand-supportable bar code symbol reading device to transmit groups of data packets to respective base units. Data package interference at each base unit is minimized during data packet reception by using a novel data packet transmission scheme.

U.S. Patent No. 5,796,091 to Schmidt et al. discloses a fully automatic bar code symbol reading system having an automatic (i.e., triggerless) portable bar code symbol reading device with an omnidirectional projection laser scanning engine mounted within the head portion of its hand-supportable housing, and an associated base unit positioned within the data transmission range without a physical wiring connection. The hand-supportable bar code symbol reading device produces a narrowly confined scanning volume for omnidirectional scanning of the code symbols presented, while preventing unintentional scanning of code symbols on nearby objects located outside the scanning volume.

U.S. Patent No. 5,789,736 to Rockstein et al. discloses a method and apparatus for reading bar code symbols using a substrate hand-holdable bar code symbol reading device. In general, the automatic bar code symbol reading device comprises a hand-holdable housing containing operative elements which provide an object detection field and a scan field each defined external to the housing. The method involves automatically detecting the presence of an object within the object detection field by sensing object sensing energy reflected off the object. In a preferred embodiment, the object sensing energy is IR radiation produced from an object sensing energy source disposed within the housing. In automatic response to the detection of the object within the object detection field, the hand-holdable device detects the presence of a bar code within the scan field using a laser beam produced within the housing. Then, in automatic response to the detection of a bar code in the scan field, the automatic hand-holdable bar code symbol reading device reads the detected bar code in the scan field by producing scan data signals from the detected bar code and thereafter collecting and analyzing the same. Another aspect of the present invention concerns

a hand-holdable data collection device adapted for use with the automatic bar code symbol reading device to form a portable symbol reading system characterized by versatility and simplicity of use.

U.S. Patent No. 5,789,731 to Amundsen et al. discloses a laser bar code symbol scanner embodying a narrow band-pass optical filtering system of novel construction. A first optical filter element is installed over the light transmission aperture of the scanner housing, and has wavelength selective properties which transmit only light having wavelengths from slightly below a predetermined wavelength in the visible band of the electromagnetic spectrum (e.g., greater than slightly below 670 nanometers). A second optical filter element is installed within the housing, along the focused laser return light path between the light focusing element and the light detecting element, and transmits only light having wavelengths from slightly above the predetermined wavelength (e.g., less than slightly above 670 nanometers). Collectively, the first and second optical filter elements cooperate to form a narrow wavelength band-pass filtering system centered about the predetermined wavelength, providing improved signal-to-noise ratio. As a result of the present invention, aesthetically unappealing electro-optical components mounted within the scanner housing are hidden from plain view, while the optical filtering elements of the system can be easily and inexpensively manufactures and used without compromising the signal-to-noise ratio performance of the laser scanner.

U.S. Patent No. 5,777,315 to Wilz et al. discloses a novel system and method programming the function parameters of programmable bar code symbol readers and scanners, while avoiding the need to couple the data communication port of a function parameter computer system and the programmable bar code symbol reader to be configured. In a first illustrative embodiment, the function-encoded parameters of a master bar code symbol reader are determined using a computer-based-function-parameter device and subsequently buffered in memory buffer contained therein; the buffered function-encoded parameters are used to produce a list of function-encoded bar code symbols which are printed in a specified reading sequence; and the list of printed-function encoded bar code symbols are read in the specified reading sequence so as to configure the bar code symbol reader with the same set of function-encoded parameters that were programmed in the master bar code symbol reader. In a second illustrative embodiment, the function-encoded parameters of a master bar code symbol reader are determined using a computer based-function-parameter acquisition device and buffered in a memory buffer contained therein; the buffered function-encoded parameters are used to produce a list of symbol reading instructions, each referencing a specific function encoded bar code symbol on a particular page of a preprinted bar code symbol programming guide, and the list of symbol reading instructions are used to read in a specified order.

U.S. Patent No. 5,767,501 to Schmidt et al. discloses a fully automatic bar code symbol reading system which has an automatic (i.e., triggerless) portable bar code symbol reading device with an omnidirectional projection laser scanning engine mounted within the head portion of its hand-supportable housing, and an associated base unit positioned within the data transmission range of the portable unit without a physical wiring connection to the portable unit. The hand-supportable bar code symbol reading device produces a narrowly confined scanning volume for omnidirectional scanning of code symbols presented within the scanning volume, while preventing unintentional scanning of code symbols on nearby objects located outside of the scanning volume.

U.S. Patent No. 5,756,982 to Knowles et al. discloses a portable automatic code symbol reading system having a laser scanning engine mounted upon the hand of its operator to provide hands-free automatic laser scanning capabilities. The automatic code symbol reading system includes a battery power supply aboard its hands-mounted housing, and a power-conserving control subsystem for conserving the consumption of electrical power during automatic portable laser scanning operations. The control subsystem of the present invention has a plurality of control centers which control the operation of the system components in accordance with preselected system control operations. Each of the control centers is responsive to control activation signals generated by certain of the system components upon the occurrence of predefined conditions. Certain of the control centers are capable of overriding other control centers to provide diverse control capabilities. These control capabilities facilitate execution of intelligent functions and power consumption measures required during automatic, hands-free code symbol reading operations.

U.S. Patent No. 5,742,043 to Knowles et al. discloses a portable automatic code symbol reading system having a laser scanning engine mounted upon the hand of its operator to provide hands-free automatic laser scanning capabilities. The automatic code symbol reading system includes a battery power supply aboard its hand-mounted housing, and a power-conserving control subsystem for conserving the consumption of electrical power during automatic portable laser scanning operations. The control subsystem of the present invention has a plurality of control centers which control the operation of the system components in accordance with preselected system control operations. Each of the control centers is responsive to control activation signals generated by certain of the system components upon the occurrence of predefined conditions. Certain of the control centers are capable of overriding other control centers to provide diverse control capabilities. These control capabilities facilitate execution of intelligent functions and power consumption measures required during automatic, hands-free code symbol reading operations.

U.S. Patent No. 5,736,982 to Suzuki et al. discloses a plurality of terminals connected to a server via a communication network, that share a predetermined common virtual space. The terminals each send to the server the position coordinates of the viewing point and direction of the eyes of its user in the virtual space, and the visual field image viewed from that viewing point is displayed on a display. Based on the position coordinates and direction of eyes of the avatar each of the other terminals received from each of the other terminals via the server, each terminal generates an avatar image in the specified direction and at the specified position and displays it in the visual field. The server is always supplied with the latest position information of the avatar from every terminal, and, when the distance between two arbitrary avatars becomes smaller than a threshold value, connects speech channels of the two terminals corresponding to these avatars.

U.S. Design Patent No. 385,265 to Knowles et al. discloses an ornamental design for a hand-supportable laser scanner.

U.S. Patent No. 5,719,385 to Wilke, Jr. et al. discloses an optical scanner for reading two-dimensional bar code labels. A rotating reflector directs a laser beam towards a plurality of pattern mirrors during a first mode of operation to produce a plurality of different scan lines forming a multi-line scan pattern for collecting light from an article having a one-dimensional bar code label, and directs the laser beam towards one of the pattern mirrors during a second mode of operation to

produce a single scan line for collecting light from an article having a two-dimensional bar code label. A single tilted mirror assembly, having a motor for rotating a drive shaft and a mirror mounted at an angle to the drive shaft, reflects the plurality of different scan lines towards the article having the one-dimensional bar code label during the first mode of operation, and reflects the one scan line from the scan module towards the article having the two-dimensional bar code label during the second mode of operation.

U.S. Patent No. 5,691,528 to Wyatt et al. discloses an optical scanning system of one and two-dimensional barcode symbols that is carried out using a variety of ergonomic scanner embodiments which can each be used either in a hand-held mode or in a fixed-mode. In certain embodiments, hand-held scanners are described, which can, if required, be easily positioned in a number of desired orientations on a work surface. Other embodiments disclose point-of-sale arrangements incorporating removable barcode scanners that can, where necessary, be removed from the point-of-sale unit and used by the checkout operator to scan a large or bulky item in a "point-and-shoot" mode.

U.S. Patent No. 5,661,292 to Knowles et al. discloses an automatic projection laser scanning system for reading bar code symbols. The system is supportable on or above a countertop surface, and includes a laser scanning device having a compact housing from which it automatically produces an object detection field of volumetric expanse for automatic detection of objects, and a scan field including at least one scanning plane for automatic laser scanning of code symbols on detected objects. Both the object detection field and the scan field spatially arranged with respect to each other and the compact housing to facilitate easy scanning of a bar code symbol presented within the scan field after the associated object has been detected within the object detection field, thereby improving the scanning efficiency of the system.

U. S. Patent No. 5,637,856 to Bridgelall et al. discloses an optical scanning system of one- and two-dimensional barcode symbols that is carried out first in an aim mode wherein the symbol is scanned using a first scan pattern that is relatively small and dense so as to be visible to the user and thereafter using a second, larger and more robust scan pattern for decoding. During aiming, the symbol is partially decoded to determine type and orientation, and this information is applied to control the angle of the scan pattern produced, the rate at which the scan pattern is increased for optimum decoding, and the ultimate pattern size. Preferred scan patterns, as well as unique scan mechanisms, are described.

U.S. Patent No. 5,637,852 to Knowles et al. discloses a bar code scanner for stationary disposition at a counter to projecting a scanning pattern comprising first, second, third, fourth and fifth groups of parallel scan lines within a relatively narrow, yet diverging, volume, e.g., pyramid, cone, etc., centered about a projection axis. The scanner includes a compact housing mounted on an adjustable base. The housing includes a window, five stationary mirrors, a laser diode, rotating reflective polygon for sweeping the laser beam from the diode across the mirrors and out a window so that the projection axis is substantially but not precisely perpendicular to the window. The scanner also includes a fixed curved collecting mirror and a concentrating lens to focus light which is reflected off of a bar code to a photodetector. One mirror extends along an axis parallel to the transverse axis to produce the first group of scan lines. The second and third mirrors are disposed opposite each other close to and laterally of the polygon and extending along respective axes at a small acute angle, e.g., 8 degrees, to the longitudinal axis to produce respective ones of

the second and third group of scan lines. The fourth and fifth mirrors are disposed between the second and third reflecting mirrors, respectively, and each extends along a respective axis at a substantial acute angle, e.g., 48 degrees, to the longitudinal axis to produce respective ones of the fourth and fifth group of scan lines.

U.S. Patent No. 5,627,359 to Amundsen et al. discloses a laser bar code symbol scanner embodying a narrow band-pass optical filtering system of novel construction. A first optical filter element is installed over the light transmission aperture of the scanner housing, and has wavelength selective properties which transmit only light having wavelengths from slightly below a predetermined wavelength in the visible band of the electromagnetic spectrum (e.g., greater than slightly below 670 nanometers). A second optical filter element is installed within the housing, along the focused laser return light path between the light focusing element and the light detecting element, and transmits only light having wavelengths from slightly above the predetermined wavelength (e.g., less than slightly above 670 nanometers). Collectively, the first and second optical filter elements cooperate to form a narrow wavelength band-pass filtering system centered about the predetermined wavelength, providing improved signal-to-noise ratio. As a result of the present invention, aesthetically unappealing electro-optical components mounted within the scanner housing are hidden from plain view, while the optical filtering elements of the system can be easily and inexpensively manufactured and used without compromising the signal-to-noise ratio performance of the laser scanner.

U.S. Patent No. 5,616,908 to Wilz et al. discloses a fully automatic bar code symbol reading system having a hand-supportable laser bar code reading device. The system has a number of operative states including an object detection state, a bar code presence detection state and a bar code symbol decoding state. During bar code symbol presence detection state, the visibly laser scanning beam produced from the hand-supportable device flickers at a rate which improves the visual conspicuousness of the laser scanning beam in the scan field. The flicker characteristics of the laser scanning beam makes it substantially easier for the user to visually align the laser scanning beam with the bar code symbol on the detected object. Consequently, reading bar code symbols is made substantially easier using the automatic laser bar code symbol reading device of the present invention.

U.S. Patent No. 5,608,202 to Bridgelall et al. discloses a self-adjusting adaptive scanning system which includes a scanner that is responsive to coordinate control signals, for directing a light beam in a pattern at a bar code symbol, for detecting a reflected portion of the light beam, and for generating feedback signals reflecting successful decodes. A microprocessor, responsive to the feedback signals, generates pattern control signals. A pattern generator generates the coordinate control signals in response to the pattern control signals to select a desirable light beam pattern.

U.S. Patent No. 5,600,121 to Kahn et al. discloses a system for reading indicia such as bar code symbols having a scanner for generating a scanning light beam directed toward a symbol to be read; a first actuator manually displaceable from a first position to a second position for producing a first light beam for aiming or positioning the reader, and a second actuator manually displaceable from a first position to a second position for initiating a scanning beam pattern for reading the symbol. The actuators are independently operative of each other. A detector receives the reflected light from the symbol and produces electrical signals corresponding to data

represented by the symbol. A graphical user interface simplifies system control functions.

U.S. Patent No. 5,591,953 to Rockstein et al. discloses an automatic bar code symbol reading system comprising components for carrying out object detection, scanning, photoreceiving, A/D conversion, bar code presence detection, symbol decoding, data format conversion, data storage and data transmission functions. In general, the bar code symbol reading device includes a control system having a plurality of control centers that control the operation of the system components in accordance with preselected system control operations. Each of the control centers are responsive to activation signals generated by certain of the system components upon the occurrence of predefined conditions. Certain of the control centers are capable of overriding other control centers to provide diverse control capabilities which facilitates execution of intelligent operations and power consumption, during bar code symbol reading.

U.S. Patent No. 5,557,093 to Knowles et al. discloses a bar code scanner for stationary disposition at a counter to projecting a scanning pattern comprising first, second, third, fourth and fifth groups of parallel scan lines within a relatively narrow, yet diverging, volume, e.g., pyramid, cone, etc., centered about a projection axis. The scanner includes a compact housing mounted on an adjustable base. The housing includes a window, five stationary mirrors, a laser diode, a rotating reflective polygon for sweeping the laser beam from the diode across the mirrors and out a window so that the projection axis is substantially but not precisely perpendicular to the window. The scanner also includes a fixed curved collecting mirror and a concentrating lens to focus light which is reflected off of a bar code to a photodetector. One mirror extends along an axis parallel to the transverse axis to produce the first group of scan lines. The second and third mirrors are disposed opposite each other close to and laterally of the polygon and extending along respective axes at a small acute angle, e.g., 8 degrees, to the longitudinal axis to produce respective ones of the second and third group of scan lines. The fourth and fifth mirrors are disposed between the second and third reflecting mirrors, respectively, and each extends along a respective axis at a substantial acute angle, e.g., 48 degrees, to the longitudinal axis to produce respective ones of the fourth and fifth group of scan lines.

U.S. Patent No. 5,528,024 to Rockstein et al. discloses a method and apparatus for automatically reading bar code symbols. One aspect of the present invention concerns a method of reading bar code symbols using an automatic hand-holdable bar code symbol reading device. In general, the automatic bar code symbol reading device comprises a hand-holdable housing containing operative elements which provide an object detection field and a scan field each defined external to the housing. The method involves automatically detecting the presence of an object within the object detection field by sensing object sensing energy reflected off the object. In a preferred embodiment, the object sensing energy is IR radiation produced from an object sensing energy source disposed within the housing. In automatic response to the detection of the object within the object detection field, the hand-holdable device detects the presence of a bar code within the scan field using a laser beam produced within the housing. Then, in automatic response to the detection of a bar code in the scan field, the automatic hand-holdable bar code symbol reading device reads the detected bar code in the scan field by producing scan data signals from the detected bar code and thereafter collecting and analyzing the same. Another aspect of the present invention concerns a hand-holdable data collection device adapted for use with the automatic bar code symbol reading device to form a portable symbol reading system characterized by versatility and simplicity of use.

U.S. Patent No. 5,525,789 to Rockstein et al. discloses a method and apparatus for automatically reading bar code symbols. One aspect of the present invention concerns a method of reading bar code symbols using an automatic hand-holdable bar code symbol reading device. In general, the automatic bar code symbol reading device comprises a hand-holdable housing containing operative elements which provide an object detection field and a scan field each defined external to the housing. The method involves automatically detecting the presence of an object within the object detection field by sensing object sensing energy reflected off object. In a preferred embodiment, the object sensing energy is IR radiation produced from an object sensing energy source disposed within the housing. In automatic response to the detection of the object within the object detection field, the hand-holdable device detects the presence of a bar code within the scan field using a laser beam produced within the housing. Then, in automatic response to the detection of a bar code in the scan field, the automatic hand-holdable bar code symbol reading device reads the detected bar code in the scan field by producing scan data signals from the detected bar code and thereafter collecting and analyzing the same. Another aspect of the present invention concerns a hand-holdable data collection device adapted for use with the automatic bar code symbol reading device to form a portable symbol reading system characterized by versatility and simplicity of use.

U.S. Patent No. 5,484,992 to Wilz et al. discloses a fully automatic bar code symbol reading system having a hand-supportable laser bar code reading device. The system has a number of operative states including an object detection state, a bar code presence detection state and a bar code symbol decoding state. During bar code symbol presence detection state, the visible laser scanning beam produced from the hand-supportable device flickers at a rate which improves the visual conspicuousness of the laser scanning beam in the scan field. The flicker characteristics of the laser scanning beam makes it substantially easier for the user to visually align the laser scanning beam with the bar code symbol on the detected object. Consequently, reading bar code symbols is made substantially easier using the automatic laser bar code symbol reading device of the present invention.

While not a prior art reference, Applicants cite U.S. Patent No. 5,468,951 to Knowles et al. as it discloses a laser scanning bar code symbol reader into which the present invention may be embodied in accordance with the inventive principles thereof.

U.S. Patent No. 5,468,949 to Swartz et al. discloses a portable laser diode scanning head, aimable at each symbol to be read, emits and receives non-readily-visible laser light, and is equipped with a trigger-actuated aiming light arrangement for visually locating and tracking each symbol. A compact laser diode optical train and an optical folded path assembly, as well as an interchangeable component design and an integral window construction for the head also are disclosed.

U.S. Patent No. 5,424,525 to Rockstein et al. discloses an automatic bar code symbol reading system comprising components for carrying out object detection, scanning, photoreceiving, A/D conversion, bar code presence detection, symbol decoding, data format conversion, data storage and data transmission functions. In general, the bar code symbol reading device includes a control system having a plurality of control centers that control the operation of the system components in accordance with preselected system control operations. Each of the

control centers are responsive to control activation signals generated by certain of the system components upon the occurrence of predefined conditions. Certain of the control centers are capable of overriding other control centers to provide diverse control capabilities which facilitates execution of intelligent operations and power consumption, during bar code symbol reading.

U.S. Patent No. 5,340,971 to Rockstein et al. discloses a method and apparatus for automatically reading bar code symbols. One aspect of the present invention concerns a method of reading bar code symbols using an automatic hand-holdable bar code symbol reading device. In general, the automatic bar code symbol reading device comprises a hand-holdable housing containing operative elements which provide an object detection field and a scan field, each defined external to the housing. The method involves automatically detecting the presence of an object within the object detection field by sensing energy reflected off the object. In a preferred embodiment, the object sensing energy is IR radiation produced from an energy which reflects off the object source disposed within the housing. In automatic response to the detection of the object within the object detection field, the hand-holdable device detects the presence of a bar code within the scan field using a laser beam produced within the housing. In automatic response to the detection of the object within the object detection field, the hand-holdable device detects the presence of a bar code within the scan field using a laser produced within the housing. Then, in automatic response to the detection of a bar code in the scan field, the automatic hand-holdable bar code symbol reading device reads the detected bar code in the scan field by producing scan data signals from the detected bar code and thereafter collecting and analyzing the same. Another aspect of the present invention concerns a hand-holdable data collection device adapted for use with the automatic bar code symbol reading device to form a portable symbol reading system characterized by versatility and simplicity of use.

While not a prior art reference, Applicants cite U.S. Patent No. 5,340,973 to Knowles et al. as it discloses a laser scanning bar code symbol reader into which the present invention may be embodied in accordance with the inventive principles thereof.

U.S. Patent No. 5,260,553 to Rockstein et al. discloses an automatic bar code symbol reading system comprising components for carrying out object detection, scanning, photoreceiving, A/D conversion, bar code presence detection, symbol decoding, data format conversion, data storage and data transmission functions. In general, the bar code symbol reading device includes a control system having a plurality of control centers that control the operation of the system components in accordance with preselected system control operations. Each of the control centers is responsive to control activation signals generated by certain of the system components upon the occurrence of predefined conditions. Certain of the control centers are capable of overriding other control centers to provide diverse control capabilities which facilitate execution of intelligent operations and power conservation, during bar code symbol reading.

U.S. Patent No. 5,250,792 to Swartz et al. discloses a portable laser diode scanning head, aimable at each symbol to be read, which emits and receives non-readily-visible laser light, and is equipped with a trigger-actuated aiming light arrangement for visually locating and tracking each symbol. A compact laser diode optical train and an optical folded path assembly, as well as an interchangeable component design and an integral window construction for the head also are disclosed.

U.S. Patent No. 5,247,162 to Swartz et al. discloses a portable laser diode scanning head, aimable at each symbol to be read, which emits and receives non-readily-visible laser light, and is equipped with a trigger-actuated aiming light arrangement for visually locating and tracking each symbol. A compact laser diode optical train and an optical folded path assembly, as well as an interchangeable component design and an integral window construction for the head also are disclosed. Also disclosed is an optic means mounted in the laser diode scanning head including a focusing lens and an aperture stop for forming the emitted laser light to have a beam cross-section of an altered size within a working distance range.

U.S. Patent No. 5,214,270 to Rando et al. discloses a bar code scanning system which can be operated in two scanning categories: handheld and fixed. The system incorporates a second scanning element having a fixedly mounted mirror and a dithering mirror disposed in relation to a hand-held scanner which is removably positioned in a holder means.

U.S. Patent No. 5,206,492 to Shepard et al. discloses a low-cost scanner for reading bar code symbols that saves electrical power consumption by oscillating one of the scanner components either by mechanical power alone or by a low-power electrical drive.

U.S. Patent No. 5,200,599 to Krischever et al. discloses a scanner in which the scan direction of at least one scan line is changeable for reading bar code symbols by selectively reversing a drive.

U.S. Patent No. 5,180,904 to Shepard et al. is a Division of U.S. Patent 5,230,520, and discloses a manually-triggered bar code scanner which automatically deactivates its laser light source and scanner motor in response to decoding a bar code signal.

U.S. Patent No. 5,149,950 to Swartz et al. discloses a portable laser diode scanning head, aimable at each symbol to be read, which emits and receives non-readily-visible laser light, and is equipped with a trigger-actuated aiming light arrangement for visually locating and tracking each symbol. A compact laser diode optical train and an optical folded path assembly, as well as an interchangeable component design and an integral window construction for the head also are disclosed.

U.S. Patent No. 5,148,008 to Takenaka discloses a mark reading device that reads marks such as a bar code, or the like on a remote surface. A laser beam is outputted, deflected through a scan angle and the reflected energy is read at a detector. This energy is processed and converted to a usable format for input into a computer, cash register, or any type of data collection device. The present invention improves depth of field and readability by varying the output energy of the laser after each successive scan, thus providing a range of energy levels at the detector.

U.S. Patent 5,107,100 to Shepard et al. discloses in Fig. 6 a hand-held laser bar code scanner (head) supported from a goose-neck type stand.

U.S. Patent No. 5,080,456 to Katz et al. discloses a bar code scanner employing a laser source and scan mirror for generating a light beam for scanning a bar code symbol or the like. The working range for distance between the scanner and the symbol is extended by placing an optical element in the path between the laser source and the scan mirror. This optical element may be a

figure of rotation such as an axicon. A slit may be positioned downstream of the axicon to block the characteristic concentric rings produced in the beam in areas perpendicular to the scan line.

U.S. Patent No. 5,047,617 to Shepard et al. discloses a narrow-bodied single-and twin-windowed hand-held, laser scanning head for reading bar code symbols which includes at least one window mounted at the rear region of the head, and through which either the incident beam going to the symbol and/or the reflected beam returning from the symbol, passes unobstructedly and exteriorly of, and past, the front and intermediate body regions of the head. A field-replaceable laser tube arrangement, a laser tube and method of making the same, an arrangement for and method of controlling a scanning system, optical passive elements for increasing the depth of field, a trigger protective device, and a one-piece support bench and method of fabricating the same by mass-production techniques are also disclosed.

U.S. Patent No. 5,021,641 to Swartz et al. discloses a portable laser diode scanning head, aimable at each symbol to be read, which emits and receives non-readily-visible laser light, and is equipped with a trigger-actuated aiming light arrangement for visually locating and tracking each symbol. A compact laser diode optical train and an optical folded path assembly, as well as an interchangeable component design and an integral window construction for the head also are disclosed.

U.S. Patent No. 5,017,765 to Shepart et al. (corresponding to U.S. Patent No. 4,758,717) discloses a manually-triggered hand-held bar code symbol reader.

U.S. Patent No. 4,933,538 to Heiman et al. discloses a bar code symbol scanning system having an automatic (triggerless) mode of operation, during which the laser beam is used to detect the presence of both objects and bar code symbols.

U.S. Patent No. 4,897,532 to Swartz et al. discloses a hand-held laser scanner having a printed circuit board upon which a single rotatable mirror structure is mounted. As disclosed, this rotary mirror structure carries both a scanning mirror and a concave collecting mirror, which undergo joint oscillatory motion in order to scan a laser beam through scanning window, while collecting and focusing reflected laser light towards a photosensor.

U.S. Patent No. 4,845,349 to Cherry discloses a manually-triggered laser bar code scanner having laser emission control circuits.

U.S. Patent No. 4,835,374 to Swartz et al. discloses a portable laser diode scanning head, aimable at each symbol to be read, which emits and receives non-readily-visible laser light, and is equipped with a trigger-actuated aiming light arrangement for visually locating and tracking each symbol. A compact laser diode optical train and an optical folded path assembly, as well as an interchangeable component design and an integral window construction for the head also are disclosed.

U.S. Patent No. 4,825,057 to Swartz et al. discloses a manually-triggered hand-held laser bar code scanner.

U.S. Patent No. 4,806,742 to Swartz et al. discloses a portable laser diode scanning head,

aimable at each symbol to be read, which emits and receives non-readily-visible laser light, and is equipped with a trigger-actuated aiming light arrangement for visually locating and tracking each symbol. A compact laser diode optical train and an optical folded path assembly, as well as an interchangeable component design and an integral window construction for the head also are disclosed.

U.S. Patent No. 4,639,606 to Boles et al. discloses a bar code scanner laser radiation exposure limit control system. In order to meet the requirements for laser radiation safety, namely laser output which can enter the naked human eye indefinitely and cause no discernible damage (Class I emission limit) in a code symbol (bar code) scanner, a mode controller is used for generating a laser enabling the signal so as to turn the laser on in a search mode until the symbols are acquired and in an in-code mode while the symbols are being scanned. When the laser is turned on it operates at a power output which would exceed the Class I emission limits if operated continuously. Circuitry is provided for operating the mode controller so that the laser is not enabled to turn on for a period long enough to exceed Class I limits. Such circuitry may be an integrator or accumulator which responds to the time that the mode controller turns the laser on and which provides an output for inhibiting the mode controller from turning the laser on for a period of time sufficient to prevent the Class I emission limit from being exceeded. The circuitry may alternatively be a pulse generator which permits the mode controller to turn the laser on repetitively during a "find paper" mode with a duty cycle such that the Class I emission limits are not exceeded.

U.S. Patent No. 4,593,186 to Swartz et al. discloses an entirely field-portable laser scanning system for reading bar code symbols which includes a light-weight and small-sized laser scanning head. The laser source, power supply component, optics, scanning elements, sensor circuit, and signal processing circuitry are specially designed for minimal size and weight and volume such that they can all be mounted in the head. The head can be bracket-mounted or hand-held. The housing for the head can be provided with a handle grip, or can be gun-shaped. High-speed oscillating scanning motors and/or penta-bimorph scanners are used as scanning elements. A trigger initiates repetitive scanning of each object bearing a symbol, and an indicator indicates when the scanning of that particular object has been terminated. A body harness supports the remaining scanner system circuitry. A non-bulky, free-movable cable interconnects the head to the body harness. Methods of scanning the symbol and of operating the system are also disclosed.

U.S. Patent No. 4,575,625 to Knowles discloses a manually-triggered hand-held bar code laser scanner.

U.S. Patent No. 4,465,926 to Apitz et al. discloses a hand-held bar-code reader which forms part of an optical reading device and is capable of being led by hand over the bar code, and comprises a storage circuit for storing the data pulse train corresponding to the scanning signals, and a photo- or sound-transmitter by which the stored data pulse train is transmitted to a separate equipment, such as a video tape recorder or radio receiver provided with a photo- or sound-receiver and an evaluating circuit. In another example of embodiment, the equipment comprising the evaluating circuit, contains a reader compartment provided with a connector member for connection to the reader which, following the scanning and storing of one or more words of the character code, is returned to its compartment and is automatically read out via the connector contacts.

U.S. Patent No. 4,409,470 to Shepard et al. discloses a manually-triggered hand-held laser bar code scanner.

U.S. Patent 4,387,297 to Swartz et al. discloses an entirely field-portable laser scanning system for reading bar code symbols includes a light-weight and small-sized laser scanning head. The laser source, power supply component, optics, scanning elements, sensor circuit, and signal processing circuitry are specially designed for minimal size and weight and volume such that they can all be mounted in the head. The head can be bracket-mounted or hand-held. The housing for the head can be provided with a handle grip, or can be gun-shaped. Highspeed oscillating scanning motors and/or penta-bimorph scanners are used as scanning elements. A trigger initiates repetitive scanning of each object bearing a symbol, and an indicator indicates when the scanning of that particular object has been terminated. A body harness supports the remaining scanner system circuitry. A non-bulky, freely-movable cable interconnects the head to the body harness. Methods of scanning the symbol and of operating the system are also disclosed.

Japanese patent No. JP411203397A to Asai discloses a bar code reader which is provided with an optical device in which the light emission timing of a laser diode emits a laser beam for reading a bar code which is controlled by an electric circuit so that an optical scanning pattern of the laser beam can be switched to either a single scanning pattern or a multi-scanning pattern. A bar code for setting an optical scanning pattern is read through the optical device so that a user can set and change the optical scanning pattern at the time of hand-held use as necessary. Thus, the user can allow the bar code reader to read the bar code with an optimal optical scanning pattern corresponding to the type of the bar code to be read at the time of hand-held use, and operability at the time of hand-held use can be improved.

The product brochure for National Semiconductor Corporation's LMC555 CMOS Timer describes a version of the industry standard 555 series purpose timers. In addition to the standard package (SOIC, MSOP, and MDIP) the LMC555 is also available in a chip sized package (8 Bump micro SMD) using National's micro SMD package technology. The LMC555 offers the same capability of generating accurate time delays and frequencies as the LM555, but with much lower power dissipation and supply current spikes. When operated as a one-shot, the time delay is precisely controlled by a single external resistor and capacitor. In the stable mode the oscillation frequency and duty cycle are accurately set by two external resistors and one capacitor. The use of National Semiconductor's LMCMOS process extends both the frequency range and low supply capability.

A separate listing of the above references on PTO Form 1449, a compact disc containing copies of U.S. patents in .pdf format, and hard copies of foreign and scientific references are enclosed herewith for the convenience of the Examiner.

Applicants believe that no fees are due at this time. However, if the Commissioner deems it necessary, he is hereby authorized to charge any fees required in connection with this document to Deposit Account No. 16-1340.

Respectfully submitted,

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L INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Sheet	1	of	8

Complete If Known	
Application Number	10/684,273
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First Name Inventor	Wilz, Sr. et al.
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U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intn'l Class / Sub Class
		Number	Kind Code (if known)			
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		6,257,492		Bressler et al.	07/10/2001	G06K 007/10
		6,247,647 B1		Courtney et al.	06/19/2001	
		6,216,953		Kumagai et al.	04/17/2001	G06K 7/10
		6,085,981		Knowles et al.	07/11/2000	G06K 7/10
		5,988,508		Bridgelall et al.	11/23/1999	G06K 007/10
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		Number	Kind Code (if known)			
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Examiner Initials	Cite No.	U.S. Patent Documents		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Intn'l Class / Sub Class
		Number	Kind Code (if known)			
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EXAMINER **DATE CONSIDERED**

EXAMINER: Initial if reference considered, whether or not citation is inconformance with MPEP 609; Draw line through citation if not in conformance not considered. Include copy of this form with next communication to applicant.

(INFORMATION DISCLOSURE STATEMENT – SECTION 9 PTO-1449)